



Chico

**Golden
Empire
Amateur
Radio
Society, Inc.**

www.gearsw6rhc.org

"Dedicated to Public Service"

THE RADIATOR



SPECIAL
SERVICE
CLUB

W6RHC
IRLP #8170



P.O.Box 202 Chico, CA 95927

February 2020 Newsletter

GEARS Founded August 13, 1939

News

Our January meeting was very enjoyable. We had a great presentation on APRS by Michale Favor N6FAV and an introduction to Raspberry Pi by Rick Hubbard KI6VOS. We will be having classes on Raspberry Pi and Python programming at our meetings over the next few months. We will also learn ham radio related uses for this computer.

In addition to Rick's Pi presentation, Kevin Fullerton WB7SKS will be speaking about the community GMRS communications project at the February GEARS meeting on February 21st.

I'm looking forward to learning about the Raspberry Pi, I've already ordered the CanaKit and the Raspberry Pi Beginners Guide book. You can get these from Amazon and elsewhere. This already looks like a lot of fun. It's always nice to learn something new. Watch this YouTube video about the CanaKit <https://youtu.be/7rcNjgVgc-I>.



Our drawing for the Yaesu FT-70DR handheld digital radio is coming up in March. You'll get entered into the drawing for attending any GEARS event, including VEC, Chico breakfast or GEARS meeting.

ARRL has a new online publication called "On the Air Magazine" which includes a magazine, podcast, blog and facebook page. It's mainly for new and intermediate operators. It also has some good tips for everyone. Check it out: <http://www.arrl.org/on-the-air-magazine>.

Wishing a happy birthday to GEARS members Rich Astley N3UOR, Mel Metcalf N6JLX, Jim Van Sickle N7ANG & Marc Farly KJ6WEX.

Have a great month.

'73

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 530-893-3314



Join GEARS on Facebook
www.facebook.com For
 timely news and additional
 information.

February 2020 Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1 Chico Ham Cram
2 2pm VEC Testing 8pm OARS Net	3 7pm GARS Net 8pm ARES Net	4 7:30pm GEARS Net	5	6 7pm PARS Net 7:30pm Simplex Net	7	8 9am Chico Breakfast GEARS Board Meeting
9 8pm OARS Net	10 7pm GARS Net 8pm ARES Net	11 7:30pm GEARS Net	12	13 7pm PARS Net 7:30pm Simplex Net	14 7pm OARS Meeting	15
16 8pm OARS Net	17 7pm GARS Net 8pm ARES Net	18 7pm ARES meeting 7:30pm GEARS Net	19	20 7pm PARS Net 7:30pm Simplex Net	21 7pm GEARS Meeting	22
23 8pm OARS Net	24 7pm GARS Net 8pm ARES Net	25 7:30pm GEARS Net	16	27 7pm PARS Net 7:30pm Simplex Net	28	29 9am OARS Breakfast

VEC Testing, FCC License Exam First Sunday of every even numbered month, at the Butte County Search and Rescue Building. Written test at 2:00 pm. For information or registration call Tom Rider, W6JS 514-9211

Chico Breakfast 2nd Saturday of the month 9 am Farmers Skillet 1818, 690 Rio Lindo Ave, Chico

GEARS Board Meeting 2nd Saturday of the month at Vitalant (formally Bloodsource) following the breakfast.

OARS Meeting Second Friday of the month, 7:00 pm, at St. Paul's Church Parish Hall, 1430 Pine St., Oroville

GARS Meeting Second Thursday of the month, 6:30 pm Lutheran Church Hall, 565 Main St. Artois.

Butte ARES Meeting 3rd Tuesday, Except Nov & Dec. at Chico Veterans Hall 7pm. Contact Dale Anderson, KK6EVX 826-3461 for more information.

GEARS Meeting, third Friday of the month, Butte County Search and Rescue Bldg., Chico. Social hour 6:00 pm, meeting at 7:00 pm.

OARS Breakfast 4th Saturday of the month 9am Gold Country Casino & Hotel, 4020 Olive Hwy, Oroville

NETS:

OARS Club Net Sunday 8pm 146.655 Mhz - PL 136.5

GARS Club Net: Monday, 7:00 pm 147.105 MHz + PL 110.09

Butte ARES Net Mondays 8pm 145.290 MHz - PL 110.9

Yuba Sutter Club Net Monday 7pm 146.085 MHz + PL 127.3

GEARS Club Net Tuesdays 7:30 PM 146.850 MHz - PL 110.9

PARS Club Net Thursday 7pm 145.290 - PL 110.9

Simplex Net Thursday 7:30 p.m. 146.52 no tone

Yuba Sutter ARES Net Thursdays 7pm 146.085 MHz + PL 127.3

Sacramento Valley Traffic Net Nightly 9:00 PM 146.850 MHz - PL 110.9

Troubleshooting Hum, Buzz, Crosstalk, and RF Pickup

Posted by Ward Silver, N0AX

Hams are typically less precise in their use of technical terms than are professional engineers and technicians. Nowhere is this more true than in descriptions of signals contaminated with unwanted signals. Since the terms refer to very different problems, using the wrong term can make troubleshooting very frustrating! This overview is intended to help customers and customer service reps describe problems accurately so they can solve

problems more quickly.

Hum

Hum is caused by an AC (alternating current) magnetic field inducing a voltage in a continuous loop of cable or wire. The amount of voltage induced by the field is proportional to the area enclosed by the loop. It typically sounds like a fairly pure tone (sine wave) at the frequency of the local AC power grid (60 Hz in the US and Canada) or of a rotating ac motor. The field is most often generated by power transformers, high-current AC wiring, and AC motors. Because of the low frequency, the field penetrates conventional cable shielding and enclosures very easily.

To reduce hum, break the loop (using a hum eliminator transformer in an audio circuit) or minimize loop area by twisting or tying cables together. If the hum is caused by a transformer, power cable, or motor, move the affected conductors away or reorient them to minimize the induced voltage. Bonding equipment together with heavy wire or strap “short out” some of the induced voltage if the loop is formed by inter-equipment cabling.

Buzz

Buzz is a higher-frequency signal than hum, usually at harmonics of the AC power frequency. A common source of buzz is half- or full-wave rectifiers in electronic power supplies and from leakage currents through stray and bypass capacitance. Rectifier circuits create current pulses at 60 or 120 Hz with a lot of harmonics and so sound “sharper” (“buzzier”) than hum. Another source of buzz is voltage differences from currents in AC power neutral and ground conductors, particularly in large buildings.

To minimize buzz, keep ac power and audio cables separated to minimize coupling. Then, try to power your radio, accessories, and computer from power outlets that use the same ground conductor (“green wire”) to the AC service panel. This minimizes any noise caused by voltages between different ground conductors. Finally, bond the affected equipment together using heavy wire or strap. If the buzz is from currents carried by the relatively light shields on most data and audio cables, bonding will give the undesired current a low-resistance path away from the desired signal path

Crosstalk

If audio from one source is added to audio in a second circuit, the combination of signals is called crosstalk or bleed-through. This often happens when the two sources share a common signal return path through a typical light cable shield or ground wire. This allows the return current to develop a small voltage across the shared ground resistance which then becomes an input signal just like the desired signal.

Crosstalk sounds like low-level audio and generally goes away only when the common return path is eliminated by removing a cable or disconnecting a return circuit. Consumer audio products often use a cable shield as a signal return which creates problems when connected to more than one piece of equipment or multiple audio sources.

Bonding equipment together may help by providing a low-resistance shared ground. A better solution is to use separate signal return paths for each source, but this is often infeasible in the typical Ham station. Ground isolation transformers (see the section on hum) may also help.

RF Pickup

The symptom of RF pickup is usually distortion of speech or data audio when transmitting. In data circuits, RF pickup results in higher error rates or data connection failures when transmitting. The problem is almost always caused by common-mode RF current flowing on cable shields.

Common-mode RF current can be blocked by winding cables on ferrite cores (see “Ferrite – What Is It Used For Anyway? (Part 2)”) to keep it out of equipment. Ethernet cables can use an RF isolator. As with hum, wire or cable loops also pick up RF so minimize the loop area. A very effective technique to reduce RF pickup is good bonding between the equipment to minimize any RF voltage differences between enclosures that cause RF current to flow.

Consumer electronics and some amateur gear often connect cable shields directly to the internal circuit ground or common. This is a common problem for equipment in plastic enclosures. RF picked up by the shield is then conducted directly to the internal electronics. If the enclosure is metal, be sure cable shields are connected only to the enclosure which should be bonded to other enclosures. If the enclosure is plastic or the signal return and shield are combined, ferrite cores will be needed.

For Further Reading

These three publications go into considerable detail about audio and RF pickup problems. The first two are online publications by Jim Brown, K9YC, a retired professional audio engineer.

<http://audiosystemsgroup.com/GroundingAndAudio.pdf>

<http://audiosystemsgroup.com/RFI-Ham.pdf>

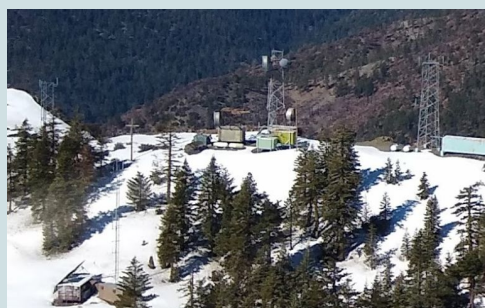
The third is a book by Ward Silver, NØAX, that discusses grounding and bonding specifically from the perspective of the Ham operator and his or her station.

<https://www.arrl.org/shop/Grounding-and-Bonding-for-the-Radio-Amateur>

GEARS / GARS New Repeater

IS ON THE AIR

W6RHC West is 145.410 Mhz
PL is 123.0 Negative offset.



GEARS Century Club Members

Rick Hubbard
Bennett Laskey

Thank you very much for your extra support



WIN A NEW DIGITAL YAESU FT-70DR RADIO

Attend GEARS events until March 20th and you will be entered in a drawing for a dual-band digital HT. You get an entry ticket each time you visit: GEARS meetings, monthly GEARS breakfasts, GEARS training event or GEARS VEC.

Club Officers:

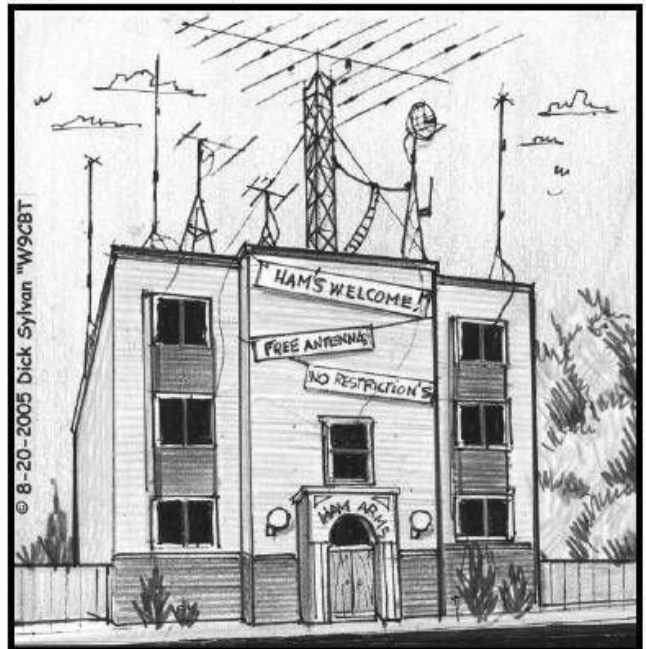
President.....Jim Matthews, K6EST
Vice-President.....Kent Hastings, WA6ZFY
Secretary.....Susan Check, KE6LTY
Treasurer.....Kathy Favor, K6FAV
Director.....Rick Hubbard, K16VOS
Director..... Dale Anderson, KK6EVX
Director.....Bennett Laskey, K6CEL
Past President.....Tom Rider, W6JS
VEC.....Tom Rider, W6JS

DO YOU HAVE OLD QST MAGAZINES IN SEARCH OF A NEW HOME?

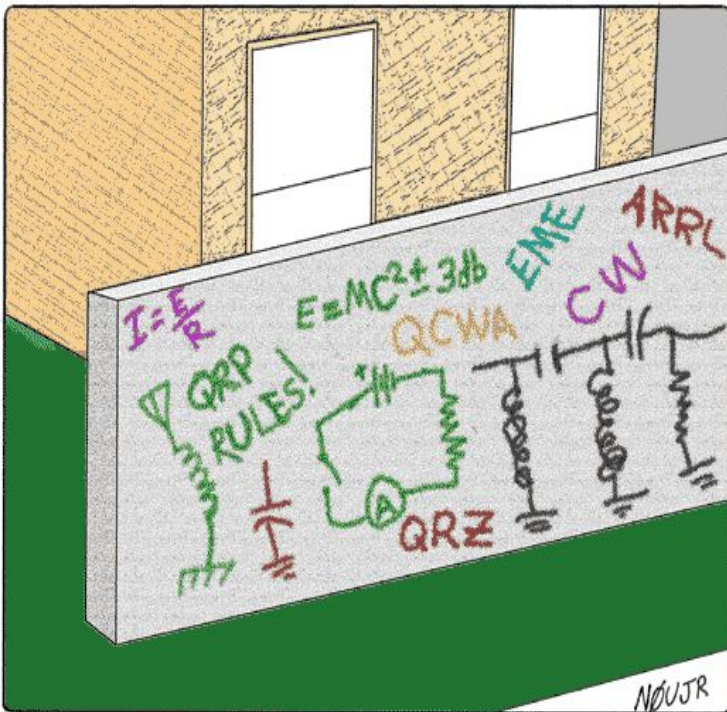
Gene Wright has that future home for your QST's, through his project to place QST Magazines in professional offices throughout Chico. Labels placed on the QST's will advertise the Golden Empire Amateur Radio Society, encourages the readers to consider Ham Radio as an interesting hobby, one of not only fun, but which provides opportunities for many and various community services.

Bring your QST's to Gene at the Club meetings or contact: Gene WA6ZRT 530-519-2519

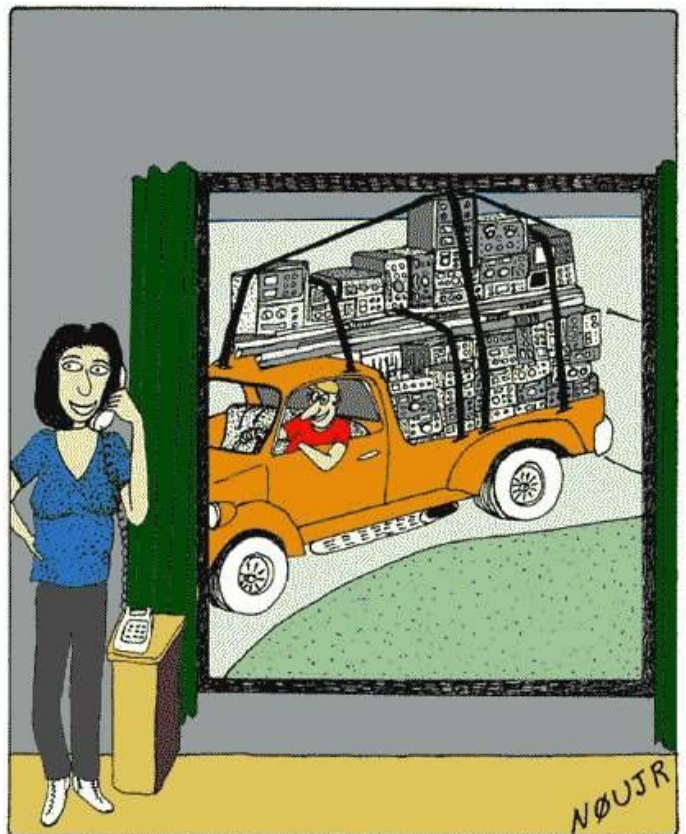
Apartments For Rent



"Looking For an Apartment Where You Can Put Up an Antenna? — Dream On!"



Ham graffiti.



"No Greg went to the ham auction this afternoon, to get rid of a couple old radios that were cluttering up the place...Oh I think I hear him pulling in now!"

Getting Started with the Raspberry Pi & Python for Ham Radio Operators

GEARS (Chico-based Golden Empire Amateur Radio Society) is offering

Slice of PI!

A Series of Short (~15 minute)
tutorials about the Raspberry Pi,
Python Programming, and Ham Radio
Uses

Useful Resources:

1. CanaKit Raspberry Pi 4 (w/4Gb) Starter Kit ("Reference Kit" for the Slice of PI Series)
2. The Official Raspberry Pi Beginner's Guide (Updated for Raspberry Pi 4). Available for purchase (paperback), or for free (PDF):
<https://magpi.raspberrypi.org/books/beginnersguide-2nd-ed>
3. YouTube Video: CanaKit Starter Kit for the Raspberry Pi 4 4GB with Heat Sink+Fan & Test! CanaKit Setup & Review:
<https://youtu.be/7rcNjgVgc-I>



Slice of Pi schedule at GEARS meetings:

Slice	Date	Topics
0	2020-01-17	Announcing <i>Slice of PI</i> Series Recommended RPI4 platform Useful Resources (e.g., Kit, Book, etc.)
1	2020-02-21	Unpacking your RPI4 NOOB and Installing the Raspberrian OS Booting the RPI4 Using SSH to access your RPI4
2	2020-03-20	"Hello Raspberry World!" Python programming on Your RPI4
3	2020-04-17	Selected Ham-Radio Related Uses of RPI4; with demos

For more information, contact KI6VOS (Rick Hubbard): gears6rhc@gmail.com